PATENT CLAIMS

1. A means for electrical contacting or isolation of organic or inorganic semiconductors in electronic and optoelectronic devices, particularly thin-film devices, wherein the means comprises a substrate (1) either in the form of contact material (1a) consisting of an organic or inorganic electrical conductor or in the form of an isolating material (4) consisting of an organic or inorganic dielectric, characterized in that the means further comprises a charge transfer material (2) provided patterned or unpatterned on or at a surface of the substrate (1), the charge transfer material including charge transfer components in the form of donors and/or acceptors, that the charge transfer material (2) forms a self-assembling layer (3) of one or more atomic and/or molecular layers, that the charge transfer material (2) has a direct or indirect bond to the surface of the substrate (1), and that the charge transfer material (2) forms a charge transfer complex with a thereabove adjacently provided organic or inorganic semiconductor (6), the charge transfer material forming a donor or acceptor material in the charge transfer complex depending upon respectively whether the semiconductor itself is an acceptor or donor material.

2. A means according to claim 1, characterized in that the bond to the surface of the substrate (1) is a chemical or electrostatic bond or a combination thereof.

3. A means according to claim 1, characterized in that the charge transfer material (2) is an organic compound.

4. A means according to claim 1, characterized in that the organic compound (2) comprises a functional group (2') which forms the bond (2'') to the surface of the substrate (1).

5. A means according to claim 4, characterized in that the functional group (2') is material selective and forms the bond (2'') to a specific substrate material (6).

6. A means according to claim 1, wherein the charge transfer material (2) is provided at the surface of the substrate (1), characterized in that the means comprises a connection layer without charge transfer components provided between the surface of the substrate (1) and the charge transfer material (2),

the connection layer forming a bond to the surface of the substrate and a bond to the charge transfer material.

7. A means according to claim 6, characterized in that the bond in each case is a chemical or electrostatic bond or a combination thereof.

8. A means according to claim 6, characterized in that the connection layer is formed of an organic bonding agent.

9. A means according to claim 8, characterized in that the organic bonding agent is formed of DNA molecules, such that the one half strand of a DNA molecule is bonded to the surface of a substrate (1) and the complementary second half strand of the DNA molecule is bonded to the charge transfer material.

10. A means according to claim 1, characterized in that the charge transfer material (2) is an atomic or molecular inorganic compound.

11. A means according to claim 10, wherein the charge transfer inorganic compound (2) is provided on the surface of the substrate (1), characterized in that the inorganic compound (2) is formed of a material which reacts chemically with the substrate (1) and between the substrate (1) and the inorganic compound (2) forms a connection layer consisting of a chemical compound of the substrate material and the inorganic compound.

12. A means according to claim 10, wherein the charge transfer inorganic compound (2) is provided at the surface of the substrate (1), characterized in that the means comprises a connection layer provided between the substrate (1) and the inorganic compound (2), the connection layer consisting of a chemical compound of the substrate material or a material with similar chemical properties, and the charge transfer inorganic compound.

13. A method for fabricating a means for electrical contacting or isolation of organic or inorganic semiconductors in electronic and optoelectronic devices, particularly thin-film devices, wherein the means comprises a substrate either in the form of contact material consisting of an organic or inorganic electrical conductor or in the form of an isolating material consisting of an organic or inorganic dielectric, and wherein the method is characterized by providing a charge transfer material as a patterned or unpatterned self-assembling layer of one or more atomic or molecular layers

on or at a surface of the substrate, the charge transfer material including charge transfer components in the form of donors and/or acceptors, forming a direct or indirect bond between the charge transfer material and the surface of the substrate, and forming a charge transfer complex of the charge transfer material together with a thereabove adjacently provided organic or inorganic semiconductor, the charge transfer material forming a donor or acceptor material in the charge transfer complex depending upon respectively whether the semiconductor itself is an acceptor or donor material.

14. A method according to claim 13, characterized by forming the bond as a chemical or electrostatic bond or a combination thereof.

15. A method according to claim 13, characterized by selecting the charge transfer material as an organic compound.

16. A method according to claim 15, characterized by selecting the organic compound with a functional group which forms the bond to the surface of the substrate.

17. A method according to claim 16, characterized by selecting the functional group as a material-selective group such that the bond is formed to a specific substrate material.

18. A method according to claim 13, wherein the charge transfer material is provided at the surface of the substrate, characterized by providing a connection layer without charge transfer components between the surface of the substrate and the charge transfer material, and forming the connection layer with a bond to the surface of the substrate and with a bond to the charge transfer material.

19. A method according to claim 18, characterized by forming the bond in each case as a chemical or electrostatic bond or a combination thereof.

20. A method according to claim 18, characterized by forming the connection layer of an organic bonding agent.

21. A method according to claim 20, characterized by forming the organic bonding agent of DNA molecules, such that the one half strand of a DNA molecule is bond to the surface of the substrate and the complementary second half strand of the DNA molecule is bond to the charge transfer material.

22. A method according to claim 13, characterized by selecting the charge transfer material as an atomic or molecular inorganic compound.

23. A method according to claim 22, wherein the charge transfer inorganic compound is provided on the surface of the substrate, characterized by forming the inorganic compound of a material which reacts chemically with the substrate such that between the substrate and the inorganic compound a connection layer consisting of a chemical compound of the substrate material and the inorganic compound is formed.

24. A method according to claim 22, wherein the charge transfer inorganic compound is provided at the surface of the substrate, characterized by providing a connection layer consisting of a compound of the substrate material or a material with similar chemical properties, and the inorganic compound, between the substrate and the inorganic compound.

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